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BAA 07-10 PROPOSER INFORMATION PAMPHLET

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Integrated Crisis Early Warning System (ICEWS), SOL BAA 07-10, Proposals Due: Initial Closing: February 20, 2007, at 12:00 noon ET. Final Closing: January 3, 2008. Technical point of contact: Sean P. O'Brien, DARPA/IPTO; EMAIL BAA 07-10@darpa.mil; FAX: (703) 741-7804.

This announcement will be posted directly to www.fbo.gov. The following information is for those wishing to respond to the announcement. This notice, in conjunction with the BAA 07-10 FBO Announcement, constitutes the total BAA. No additional information is available, nor will a formal Request for Proposal (RFP) or additional solicitation regarding this announcement be issued. Requests for same will be disregarded.

PROGRAM OBJECTIVES AND DESCRIPTION

PROGRAMMATICS

Introduction

The recent National Security Strategy (2005) outlined two priorities (among others) for the Department of Defense (DoD):

1. *crisis early warning* in order to influence crises in their earliest stages before they become more threatening and more dangerous to U.S. interests.
2. *methodologies* that consider the full range of risks associated with resources and operations and manage explicit tradeoffs across the Department.

In response, the Defense Advanced Research Projects Agency (DARPA) Information Processing Technology Office (IPTO) is developing a new program called Integrated Crisis Early Warning System (ICEWS) and soliciting proposals for end-to-end solutions for the development of state-of-the-art computational modeling capabilities that can monitor, assess, and forecast, in near-real time, a variety of phenomena associated with country instability.

Program description

The goal of the ICEWS program is to develop a comprehensive, integrated, automated, generalizable, and validated system to monitor, assess, and forecast national, sub-national, and international crises in a way that supports decisions on how to allocate resources to mitigate them. ICEWS will provide Combatant Commanders (COCOMs) with a powerful, systematic capability to anticipate and respond to stability challenges in the Area of Responsibility (AOR); allocate resources efficiently in accordance to the risks they are designed to mitigate; and track and measure the effectiveness of resource allocations toward end-state stability objectives, in near-real time. More specifically, ICEWS will provide COCOMs with answers to three fundamental questions:

1. Which countries in the AOR are likely to become more or less unstable in the near-, mid-, and long-term?
2. What are the factors that are driving instability?
3. Given the array of national security resources across the entire Diplomatic, Information, Military, Economic (DIME) spectrum, what combinations of strategies, tactics, and resources are likely to have the greatest positive impact on mitigating the instability?

The envisioned program will proceed in three phases, as described below. (Note: this BAA solicits proposals for Phase 1 activities only. Funding for

subsequent phases will be contingent on Phase 1 performance.) DARPA will not impose a-priori a length for Phase 1 activities. Rather, proposers are required to define the cost and schedule for their effort, including milestones and deliverables, keeping in mind that periodic program reviews will be conducted.

Phase 1 will require building, testing, and evaluating computational social science models for forecasting various forms of country instability. The modeling capabilities will be evaluated at the end of Phase 1 based on their ability to retrospectively "forecast" several classes of events that are often associated with (and consequences of) country instability.

Phase 2 will consist of developing the decision support analytical and technical foundation for ICEWS. The key objective of Phase 2 is to develop the capability to generate robust DIME strategy/tactics/resource packages that could be applied to any particular configuration of factors driving the instability. A variety of methodologies will be explored to empirically "map" DIME actions to the model "levers" they are designed to influence, identify and evaluate robust DIME solutions to various stability challenges, and update model parameters as a result of changes occurring in the world.

Phase 3 will involve a live, in-theater test of the system's ability to generate robust solutions to fulfill Combatant Command stability objectives in both resource-constrained and unconstrained environments.

Working definitions

Since the DoD currently does not embrace a formal definition of *country instability,* the following working definition will be used for the purposes of this solicitation and program:

A country is *unstable* if (and only if) the government or its opponent(s) threatens or initiates a conflict to restore equilibrium or harmony with respect to its internal or external relations.

Conflict in this sense is viewed as an observable (and measurable) outcome or consequence of instability. Instability increases as the level of intensity of provocative and violent activity increases. Conversely, stability is restored when provocative and violent activity ceases, or diminishes to an "acceptable" level.

Program Scope

The overarching goal of ICEWS is to produce an integrated system that can forecast the occurrence and level of intensity of different types of conflict events that may occur as a result of instability.

Forecasting significant Events of Interest (EoIs): DARPA is interested in approaches that demonstrate promise for forecasting a variety of discrete events often associated with country instability. The following EoIs are illustrative:

- Riots and rebellions
- Regime changes
- Major economic collapses
- Violent anti-state insurgencies
- Major acts of government repression
- Civil wars
- International crises (conflicts between 2 or more countries)

The goal of ICEWS is to cover the broadest possible spectrum of events encompassing instability and political violence. Toward that end, proposals that seek to forecast additional or alternative events are encouraged. Proposals to forecast more than one type of event are highly preferred. Offerors should clearly describe the analytical approach or approaches they will take to forecast each of the events they choose.

It is anticipated that some performing teams will focus their research on common sub-sets of EoIs, while other EoIs will garner the attention of a single team. Each team will be evaluated based on how accurately it can forecast the EoIs it proposes to cover. To impose some consistency in the overall, cross-team evaluation, all performing teams will be evaluated based on their respective abilities to forecast the likelihood that any country, and province within a given country, will experience none, low, moderate, or high levels of violence reflected in the typology depicted in Figure 1 below, which will serve as an overall index of instability. This index will be used to establish a baseline level of stability against which progress toward stability goals in the AOR can be assessed. These data are derived from reports of the Conflict Barometer published annually by the Heidelberg Institute of International Conflict Research (http://www.hiik.de/en/index_e.htm).

State of Violence	Intensity Group	Level of Intensity	Name of Intensity	Definition
Non-Violent	None	0	No Conflict	Self-explanatory
	Low	1	Latent Conflict	A positional difference on definable values of national meaning is considered to be a latent conflict if respective demands are articulated by one of the parties and perceived by the other as such.
		2	Manifest Conflict	A manifest conflict includes the use of measures that are located in the preliminary stage to violent force. This includes for example verbal pressure, threatening explicitly with violence, or the imposition of economic sanctions.
Violent	Medium	3	Crisis	A crisis is a tense situation in which at least one of the parties uses violent force in sporadic incidents.
	High	4	Severe Crisis	A conflict is considered to be a severe crisis if violent force is repeatedly used in an organized way.
		5	War	A war is a type of violent conflict in which violent force is used with certain continuity in an organized and systematic way. The conflict parties exercise extensive measures, depending on the situation. The extent of destruction is massive and of long duration.

Figure 1. Index of Instability/Conflict Intensity from the Heidelberg Institute for International Conflict Research

Historical instability data: Historical data on the occurrence and location of the discrete events will be provided by DARPA as Government-Furnished Information (GFI) to the performers at the Kickoff Meeting. DARPA will also provide performers with a common set of historical data measuring countries and provinces on the index of instability/conflict intensity. Again, performers are encouraged to nominate additional categories of events that further DARPA's mission to provide a crisis early warning capability to the COCOMs. In doing so, proposals must identify and characterize the sources from which the Government Team can procure the necessary data that will serve as the basis for evaluating the proposed modeling approach(es).

Case Selection: The specific list of countries that will be used by performers to build and test their ICEWS approaches will be released at the Kickoff Meeting. Performers should demonstrate that their proposed technical approaches will scale to 30-40 diverse country-cases that include a mix of stable, semi-stable, and highly unstable countries. Because one of the objectives of ICEWS is fielding a *generalizable* capability to forecast progress toward or away from stability, a viable solution would involve the ability to measure or predict country instability using a consistent set of factors applicable to all major countries with populations that exceed 500,000 people.

Level of Fidelity: Conflicts that are generally isolated in particular geographic regions within any given country can—and usually do—have national implications. Proposed ICEWS systems should take a two-track approach to forecasting instability.

- Track one should address forecasting at the national level the likelihood that a particular type of conflict (e.g. a coup) will occur somewhere within a given country during a specified period of time.
- Track two should address forecasting the specific sub-national location (e.g., province) within which an event is expected to occur (e.g. the development of an insurgency in one or more provinces). Due to the anticipated unavailability of complete sets of high quality, sub-national data for many of the most important countries, it is anticipated that track two forecasting will be conducted for a small number (approximately 6 for planning purposes) of countries where high quality data can be identified.

Technical Approach: It is expected that a viable ICEWS solution will require technical approaches that:

- account for the complexity of interactions between governments and government institutions, the people they govern (or claim to govern), and non-state actors such as al-Qaeda and other similar groups that are not tied to any specific geographic location.
- identify the *generalizable* patterns in these interactions (i.e. "early warning indicators") that allow us to estimate with a high degree of accuracy the probability that an insurgency will develop, a civil war will occur, one or more countries will attack another with military force, or a military coup will be hatched to dispatch a current set of rulers, to name but a few examples. Models should be generalizable through time and space. Models that are designed to apply narrowly to only a single country or sub-national regions within a single country are discouraged.
- determine how a country's macro-structural conditions (social, demographic, economic) affect the way in which the country's citizens interact with its government; determine how these conditions enable or constrain the way in which the country's leadership interacts with its people, and other governments for that matter.
- identify whether there are certain characteristics of a government's leaders that are particularly telling about their propensity to defuse or exacerbate potentially volatile situations.
- leverage the latest information processing technologies that can capture and process vast quantities of data from digitized news media, websites, blogs, and other sources of information that reflect the dynamic and rapidly changing character and intensity of interactions between people and governments.

Teaming

Since it is presumed that there are “niche” capabilities—different types of models that are broadly or narrowly scoped; models that operate at different levels of fidelity; information processing technologies and the like—that must be brought together and integrated coherently to produce a viable solution, DARPA encourages teaming. Each team will be expected to build a complete end-to-end instability forecasting system and will be evaluated based on how accurately it can forecast the EoIs it proposes to cover.

The ICEWS systems from different teams will not be integrated so that teams can focus on their own unique solution for forecasting the EoIs. Each team's ICEWS solution will, however, be assessed using a common testbed / experimentation framework to support common evaluation (see Performance metrics and forecast horizon section below). A government team will serve as independent evaluators of each performing team’s solution.

DARPA is interested in a complete, end-to-end solution. However, innovative but more narrowly-scoped proposals that address only a portion of the ICEWS problem space will also be considered for Phase 1 funding. Awards to multiple teams are anticipated. Offerors with more narrowly scoped and unique contributions are encouraged to register on the teaming website discussed below in Section A - Web site, teaming and ongoing Q&A**.**

Operational Capabilities

DARPA is interested in a complete system solution in which data is provided to the system from databases, flows through the integrated model, and produces results that may be visualized through a user interface. In Phase 1, the databases will be populated with EoIs (i.e., dependent variables) provided by the Government. Each ICEWS team will be responsible for gathering its own model-specific data (independent variables).

In order to provide the most value to users, ICEWS should operate semi-automatically, e.g., with minimal human intervention. Once data has been provided to the system, the system should process it, run the models, generate the output, and alert the user that forecasts are ready. Through the user interface, the user should be able to review and visualize the resulting forecasts at the AOR, national, and sub-national levels. The user should be able to review and visualize the input data to the models on a per model basis. In addition, ICEWS should provide a capability to automatically generate explanations for each forecast. The system should allow the user to access a transparent step-by-step description of the computations performed to generate the forecast. Finally, ICEWS should provide a simple “what-if” capability that allows the user to change the values of original input data and rerun the models to determine whether the forecast will change as a result of changing the input data.

Performance metrics and forecast horizon

Modeling systems will be evaluated for their ability to retrospectively forecast each of the discrete EoIs proposed by the performers and approved by the Government, as well as the general level of intensity of instability the country will experience as described in Figure 1. The evaluation will be performed using split-sample validation. In split-sample validation, performers will be allowed to train or calibrate their models using a set of historical training data whereby the relationships between inputs (factors believed to be related to instability in a predictive way) and outputs (the event to be forecast) are established. The test set will include data for subsequent historical periods and will be unseen by the models. Each team will be evaluated based on its ability to forecast the correct occurrences in the test set compiled for each of the EoIs. Two years of test set data will be reserved for the evaluation.

Each team will generate forecasts of the likelihood that each of their EoIs will occur in four subsequent six-month periods (see Figure 2). Thus, if data from 2005-2007 are withheld for the test set, teams will be permitted to use historical data up through December of 2004 to generate probabilities that each event will occur between January and June of 2005; use historical data up through June of 2005 to compute the likelihood the events will occur between July and December of 2005, and so forth until forecasts for each event and each country/province have been computed. These forecasts will be compared with actual occurrences, and three separate performance metrics will be computed: accuracy, recall, and precision, as defined in Figure 2.

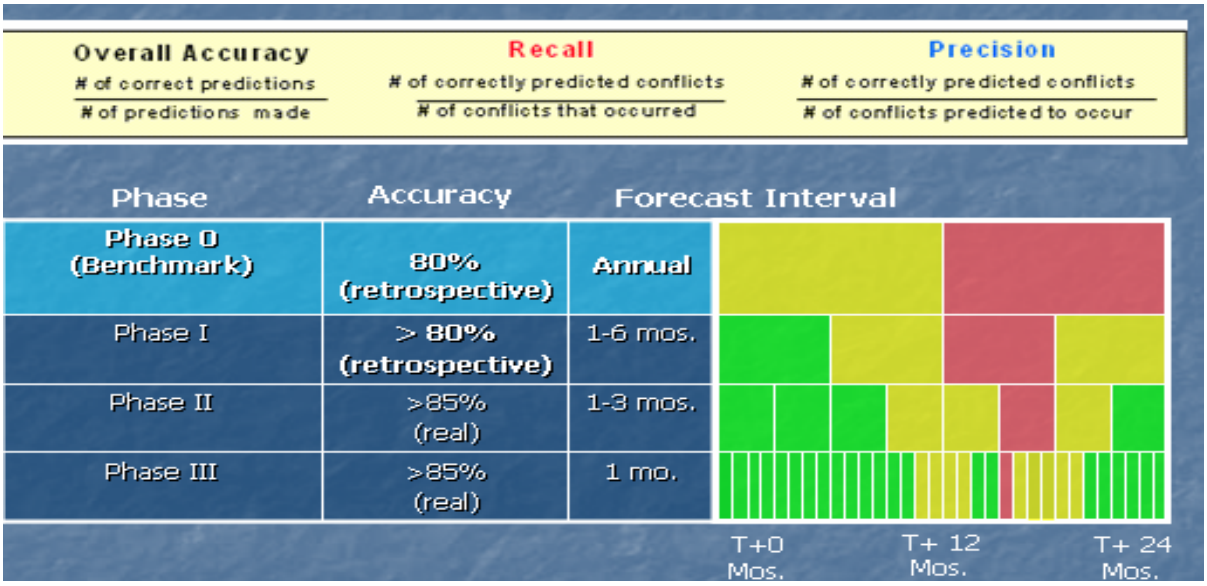

Figure 2: ICEWS Evaluation performance metrics

It is expected that substantial progress toward the program objectives will be evidenced at each review, and that progress will be evaluated qualitatively and quantitatively at each bimonthly review according to the following criteria. Ongoing program support will be contingent upon satisfactory reviews.

The goal established for Phase 1 is 80% overall accuracy, which will be computed for each EoI. The accuracy goal for subsequent phases increases slightly, but more important, the forecast window will contract significantly from six months to one month. For example, in Phase 1, performers will need to estimate the likelihood that an EOI will or will not occur within the next six months; in Phase 2, within the next 3-months; and Phase 3, within the next month. Models in Phases 2 and 3 will also be evaluated based on their ability to forecast EoIs in near-real time as opposed to retrospective evaluations.

Deliverables

The required ICEWS Phase 1 deliverables are specified in the following table. While offerors will be setting the schedule for the deliverables, they should occur in the order shown here.

	Deliverable Description	**Due Date**
D1	ICEWS Model Descriptions	TBD by performer
D2	ICEWS System Requirements and Design	TBD by performer
D3	ICEWS Test Plan	TBD by performer
D4	ICEWS Phase 1 System Documentation	TBD by performer
D5	ICEWS Phase 1 Forecast Report	TBD by performer
MSR	Monthly Status Reports	5th Day of each month

Each contractor shall provide a Model Descriptions report, which contains a detailed explanation of each model used in their proposed ICEWS end-to-end system, including a theoretical basis for the model and a worked example. Also included in the report should be a description of the data used, the sources from which they will be obtained, the availability of the sources, and the offeror's plan for gathering the data.

The ICEWS Systems Requirements and Design document will be the basis for the Critical Design Review. This document shall describe the ICEWS Application Framework, the contractor's operational concept, and the detailed design of the ICEWS components. The contractor shall show how the models will be integrated into the application framework and describe how the user interface, visualization, database, explanation generation and decision support tools will operate. Sample user interface screens should be shown.

The ICEWS Test Plan will describe the contractor's methodology and procedures for verifying and validating the models and testing ICEWS prior to performing the Retrospective Forecasting (see section on performance metrics and forecast

horizon below). The Test Plan will be used by the Government to verify, validate and test the models prior to the Retrospective Forecasting at the end of Phase 1.

ICEWS System Documentation shall encompass revised versions of the previous documents to reflect the as-built system as well as documentation for tools and software used to design, develop, implement, and operate ICEWS. System documentation shall include source code and test procedures for all non-commercial software.

The ICEWS Phase 1 Forecast Report will present the results of running ICEWS using GFI as well as contractor-acquired data to make forecasts for 30-40 countries for the specified period. These forecasts shall include the auto-generated explanations.

Milestones

Phase 1 milestones are depicted in Figure 3. The Government has established these milestones in order to manage and assess the Contractor's progress during Phase 1 of the program. The failure of a team to make acceptable progress at two successive milestones may result in termination of their Phase 1 funding.

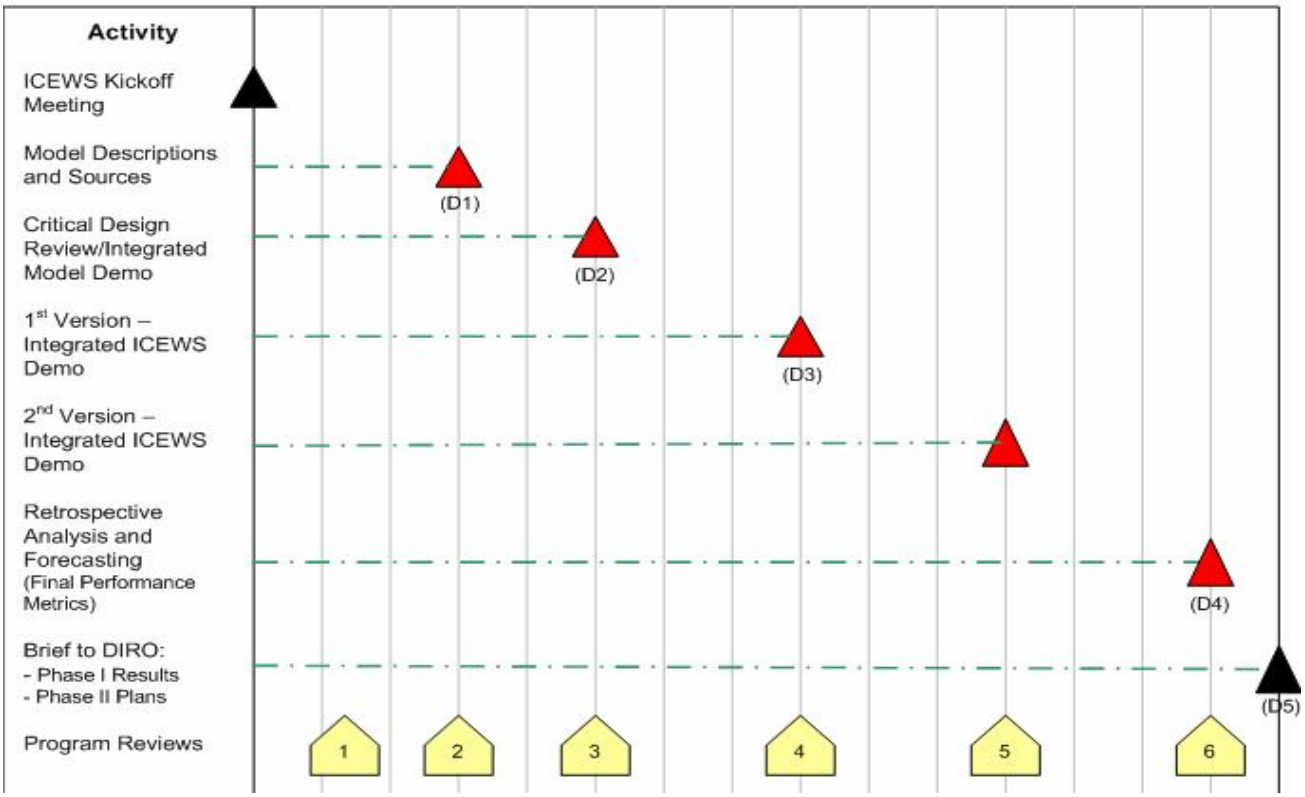

Figure 3: Phase 1 Timeline & Milestones

GENERAL INFORMATION & OTHER REQUIREMENTS

A. Web site, teaming and ongoing Q&A

The solicitation web page at http://www.darpa.mil/ipto/solicitations/open/07-10_PIP.htm will have information on teaming and possibly a Frequently Asked Questions (FAQ) list.

B. Offeror eligibility

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA. Historically Black Colleges and Universities (HBCUs), Small Disadvantaged Businesses and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals. However, no portion of this announcement will be set aside for Small Disadvantaged Business, HBCU and MI participation due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities. Independent proposals from Government/National laboratories may be subject to applicable direct competition limitations, though certain Federally Funded Research and Development Centers are excepted per P.L. 103-337§ 217 and P.L 105-261 § 3136.

Foreign participants and/or individuals may participate to the extent that such participants comply with any necessary Non-Disclosure Agreements, Security Regulations, Export Laws, and other governing statutes applicable under the circumstances.

C. Submission process

Proposals not meeting the format described in this pamphlet may not be reviewed. Proposals MUST be submitted to DARPA in hard copy. Any submissions sent via fax or email will be disregarded (see Exception note below). Responding to this announcement requires completion of an online Cover Sheet for each Proposal prior to submission. To do so, the offeror must go to **https://csc-ballston.dmeid.org/baa/index.asp?BAAid=07-10** and follow the instructions there.

Each offeror is responsible for printing the Confirmation Sheet and attaching it to every proposal copy. If an offeror intends to submit more than one Proposal, a unique UserId and password must be used in creating each Cover Sheet.

All proposals must include the following:

- One (1) print original of the full proposal including the Confirmation Sheet. Please do not use 3-ring binders.

- Two (2) print copies of the full proposal including the Confirmation Sheet. Please do not use 3-ring binders.
- One (1) electronic copy of the full proposal. This electronic copy must be:
    - On a CD
    - In PDF or Microsoft Word for IBM-compatible format
    - clearly labeled with BAA 07-10, offeror organization, proposal title (short title recommended)

DARPA will acknowledge receipt of complete submissions and assign control numbers that should be used in all further correspondence regarding proposals.

The full proposal (original and designated number of hard and electronic copies) must be submitted in time to reach DARPA by 12:00 PM (ET) February 20, 2007 (initial closing), in order to be considered during the initial evaluation phase. However, BAA 07-10 ICEWS will remain open until 12:00 NOON (ET) January 3, 2008 (final closing date). Thus, proposals may be submitted at any time from issuance of this announcement through 12:00 NOON (ET) January 3, 2008, however, offerors are warned that the likelihood of funding is greatly reduced for proposals submitted after the initial closing date deadline.

Failure to comply with the submission procedures may result in the submission not being evaluated.

D. Administrative Notes

Restrictive notices notwithstanding, proposals may be handled for administrative purposes by support contractors. These support contractors are prohibited from competition in DARPA technical research and are bound by appropriate non-disclosure requirements.

Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants /experts who are strictly bound by the appropriate non-disclosure requirements.

It is the policy of DARPA to treat all proposals as competitive information and to disclose their contents only for the purpose of evaluation. No proposals will be returned. Upon completion of the source selection process, the original of each proposal received will be retained at DARPA and all other copies will be destroyed.

E. BAA correspondence and administrative addresses

DARPA will use electronic mail for all technical and administrative correspondence regarding this BAA, with the exception of selected/not-selected

notifications. These official notifications will be sent via US mail to the Technical POC identified on the proposal coversheet.

Administrative, technical or contractual questions should be sent via e-mail to BAA07-10@darpa.mil. If e-mail is not available, please fax questions to (703) 741-7804, Attention: ICEWS Solicitation. All requests must include the name, email address, and phone number of a point of contact.

Solicitation Web site and Electronic File Retrieval:
http://www.darpa.mil/ipto/solicitations/solicitations.htm.

Postal address: DARPA/IPTO, ATTN: BAA 07-10, 3701 N. Fairfax Drive, Arlington, VA 22203-1714. For deliveries that require a phone number, such as FedEx or UPS, please use 703-696-2356, which is the DARPA mailroom.

For hand deliveries, the courier shall deliver the package to the DARPA Visitor Control Center at the address specified above. To ensure proper handling, the outer package, as well as the cover page of the proposal, must be marked "IPTO BAA 07-10."

F. Period of performance, acquisition plan, funding, and award information

Multiple awards are anticipated. The amount of resources made available to this BAA will depend on the quality of the proposals received and the availability of funds. This program will be a 6.2 funded effort and offerors should note the restrictions listed below under Section K – "Publication approval."

As soon as the evaluation of a proposal is complete, the offeror will be notified that 1) the proposal has been selected for funding pending contract negotiations, or 2) the proposal has not been selected. The Government reserves the right to select for negotiation all, some, one, or none of the proposals received in response to this solicitation, and to make awards without discussions with offerors. The Government also reserves the right to conduct discussions if the Source Selection Authority later determines them to be necessary. If warranted, portions of resulting awards may be segregated into pre-priced options. Additionally, DARPA reserves the right to award without discussions, and to accept proposals in their entirety or to select only portions of proposals for award. In the event that DARPA desires to award only portions of a proposal, negotiations may be opened with that offeror. If the proposed effort is inherently divisible and nothing is gained from the aggregation, offerors should consider submitting it as multiple independent efforts. The Government reserves the right to fund proposals in phases with options for continued work at the end of one or more of the phases. Awards under this BAA will be made to offerors on the basis of the evaluation criteria listed below (see section labeled "Proposal Evaluation Criteria"), and program balance to provide best value to the Government. Proposals identified for negotiation may result in a contract, cooperative

agreement, or other transaction depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors. The Government reserves the right to choose the appropriate instrument. Offerors should note that the required degree of interaction between parties, regardless of award instrument, will be high and continuous.

G. Meeting and travel requirements

There will be a program kickoff meeting and all key participants are required to attend. Performers should also anticipate periodic site visits at the program manager's discretion.

H. Reporting requirements

The award document for each proposal selected and funded will contain a mandatory requirement for four DARPA/IPTO Quarterly Status Reports each year, one of which will be an annual project summary. These reports will be electronically submitted by each awardee under this BAA via the DARPA/IPTO Technical – Financial Information Management System (T-FIMS). The T-FIMS URL and instructions will be furnished by the contracting agent upon award.

In addition, each performing contractor (including subs) on each team will be expected to provide monthly status reports to the Program Manager. There may also be additional reporting requirements for cooperative agreements.

I. Human use

Proposals selected for contract award are required to comply with provisions of the Common Rule (32 CFR 219) on the protection of human subjects in research (http://www.dtic.mil/biosys/downloads/32cfr219.pdf) and the Department of Defense Directive 3216.2 (http://www.dtic.mil/whs/directives/corres/html2/d32162x.htm). All proposals that involve the use of human subjects are required to include documentation of their ability to follow Federal guidelines for the protection of human subjects. This includes, but is not limited to, protocol approval mechanisms, approved Institutional Review Boards, and Federal Wide Assurances. These requirements are based on expected human use issues sometime during the entire length of the proposed effort.

For proposals involving "greater than minimal risk" to human subjects within the first year of the project, performers must provide evidence of protocol submission to a federally approved IRB at the time of final proposal submission to DARPA. For proposals that are forecasted to involve "greater than minimal risk" after the first year, a discussion on how and when the offeror will comply with submission to a federally approved IRB needs to be provided in the submission. More information on applicable federal regulations can be found at the Department of

Health and Human Services – Office of Human Research Protections website (http://www.dhhs.gov/ohrp/).

Any aspects of a proposal involving human use should be specifically called out as a separate element of the statement of work and cost proposal to allow for independent review and approval of those elements.

J. Security classification

Offerors should develop and include in their proposals a brief description of their strategy either to participate in potential classified phases of ICEWS or to transition their technology to other entities that can participate. Security classification guidance on a DD Form 254 (DoD Contract Security Classification Specification) will not be provided at this time since DARPA is soliciting ideas only and does not encourage classified proposals in response to this announcement. However, after reviewing incoming proposals, if a determination is made that contract award may result in access to classified information, a DD Form 254 will be issued upon contract award. ***If you choose to submit a classified proposal you must first receive the permission of the Original Classification Authority to use their information in replying to this announcement.***

K. Publication approval

The following provision will be incorporated into any resultant contract/other transaction/cooperative agreement:

(a) There shall be **no** dissemination or publication, except within and between the Contractor/Awardee and any subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant to this contract **without prior written approval of the DARPA Technical Information Officer (DARPA/TIO).** All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the Contractor/Awardee.

(b) When submitting material for written approval for open publication as described in subparagraph (a) above, the Contractor/Awardee must submit a request for public release to the DARPA TIO and include the following information: 1) Document Information: document title, document author, short plain-language description of technology discussed in the material (approx 30 words), number of pages (or minutes of video) and document type (briefing, report, abstract, article, or paper); 2) Event Information: event type (conference, principle investigator meeting, article or paper), event date, desired date for DARPA's approval; 3) DARPA Sponsor: DARPA Program Manager, DARPA office, and contract number; and 4) Contractor/Awardee's Information: POC name, e-mail and phone. Allow four weeks for processing;

due dates under four weeks require a justification. Unusual electronic file formats may require additional processing time. Requests can be sent either via e-mail to tio@darpa.mil or via 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (571) 218-4235. Refer to www.darpa.mil/tio for information about DARPA's public release process.

L. Export Licenses

The Contractor shall comply with all U. S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in the performance of a resulting contract. In the absence of available license exemptions/exceptions, the Contractor shall be responsible for obtaining the appropriate licenses or other approvals, if required, for exports of hardware, technical data, and software, and for the provision of technical assistance.

The Contractor shall be responsible for obtaining export licenses, if required, before utilizing foreign persons in the performance of this contract, including instances where the work is to be performed on-site at any Government installation including installations in the United States, where the foreign person will have access to export-controlled technical data or software.

The Contractor shall be responsible for all regulatory record keeping requirements associated with the use of licenses and license exemptions/exceptions.

The Contractor shall be responsible for ensuring that the provisions of this clause apply to its subcontractors.

PROPOSAL PREPARATION AND FORMAT

The proposal shall be delivered in two volumes, Volume 1 (technical proposal) and Volume 2 (cost proposal). The technical volume should include sections I, II, and optionally III as described below. The cost volume should include section IV as described below.

Proposals shall include the following sections, each starting on a new page (where a "page" is 8-1/2 by 11 inches with type not smaller than 12 point) and with text on one side only. Apart from what is described in Section III, the submission of other supporting materials along with the proposal is strongly discouraged. All submissions must be in English.

Individual elements of Sections I and II of the proposal shall not exceed the total of the maximum page lengths for each section as shown in braces { } below.

Section I. Administrative

A. Confirmation Sheet

The confirmation sheet (described under “Submission Process” of this announcement) will contain the following information:

- Announcement number;
- Technical topic area;
- Proposal title;
- Technical point of contact including: name, telephone number, electronic mail address, fax (if available) and mailing address;
- Administrative point of contact including: name, telephone number, electronic mail address, fax (if available) and mailing address;
- Summary of the costs of the proposed research, including total base cost, estimates of base cost in each year of the effort, estimates of itemized options in each year of the effort, and cost sharing if relevant;
- Contractor's type of business, selected from among the following categories: "WOMEN-OWNED LARGE BUSINESS," "OTHER LARGE BUSINESS," "SMALL DISADVANTAGED BUSINESS [Identify ethnic group from among the following: Asian-Indian American, Asian-Pacific American, Black American, Hispanic American, Native American, or Other]," "WOMEN-OWNED SMALL BUSINESS," "OTHER SMALL BUSINESS," "HBCU," "MI," "OTHER EDUCATIONAL," "OTHER NONPROFIT", or "FOREIGN CONCERN/ENTITY."

B. {1 Chart} PowerPoint summary chart

Section I should include a one slide summary of the proposal in PowerPoint that effectively and succinctly conveys the main objective, key innovations, expected impact, and other unique aspects of the proposal

C. {No page limit} Table of contents

Section I should include a table of contents for the overall technical volume.

Section II. Detailed Proposal Information

This section provides the detailed discussion of the proposed work necessary to enable an in-depth review of the specific technical and managerial issues. Page-counts listed in braces are maximums.

A. {1 Page} Innovative claims for the proposed research.

This page is the centerpiece of the proposal and should succinctly describe the unique proposed approach and contributions.

B. {2 Pages} Proposal Roadmap

The roadmap provides a top-level view of the content and structure of the proposal. It contains a synopsis for each of the roadmap areas defined below, which should be elaborated elsewhere. It is important to make the synopses as explicit and informative as possible. The roadmap must also cross-reference the proposal page number(s) where each area is elaborated. The required roadmap areas are:

a. Main goals of the proposed research
b. Tangible benefits to end users (i.e., benefits of the capabilities afforded if the proposed technology is successful)
c. Critical technical barriers (i.e., technical limitations that have, in the past, prevented achieving the proposed results)
d. Main elements of the proposed technical approach
e. Basis of confidence (i.e. rationale that builds confidence that the proposed approach will overcome the technical barriers)
f. Risk if work is not done. If DARPA were not to fund the proposed effort, what would be lost? In addition to lost technical opportunities, offerors may wish to consider whether the nature of the proposal is such that it requires large-scale sustained funding of a substantial team in contrast to the separate funding of individual smaller-scale efforts.
g. Nature and description of end results to be delivered to DARPA. In what form will results be developed and delivered to DARPA and the scientific community? Note that DARPA encourages experiments, simulations, specifications, proofs, etc. to be documented and published to promote progress in the field. Offerors should specify both final and intermediate products.
h. Cost and schedule of the proposed effort
i. Criteria for objectively evaluating progress on a six month or annual basis

C. {2 Pages} Detailed Research Objectives

1. Problem Description. Provide concise description of problem area addressed by this research project.

2. Research Goals. Identify specific research goals of this project. Identify and quantify expected performance improvements from this research. Identify new capabilities enabled by this research. Identify and discuss salient features and capabilities of developmental hardware and software prototypes.

3. Expected Impact. Describe expected impact of the research project, if successful. Characterize the influence this work is expected to have on the relevant contributing research communities.

D. {12 Pages} Detailed Technical Approach

Provide detailed description of technical approach that will be used in this project to achieve research goals. This section will elaborate on many of the topics identified in the proposal road map and will serve as the primary expression of the offerors' scientific and technical ideas.

E. {2 Pages} Experimentation Plans

Offerors should identify any planned experiments to test their hypotheses and must be willing to work with other contractors in order to develop joint experiments and validation. If needed, funding to support experimentation efforts should be included in technology project bids.

F. {3 Pages} Comparative related work analysis

Describe and analyze state-of-the-art results, approaches, and limitations within the context of the problem area addressed by this research. Demonstrating problem understanding requires not just the enumeration of related efforts; rather, related work must be compared and contrasted to the proposed approach. There is a large body of scholarship that has produced a wealth of theoretical perspectives and empirical findings that serve as guideposts for the development of a comprehensive crisis early warning system. Proposals should demonstrate some familiarity with this literature.

G. {3 Pages} Overall Statement of Work

Written in plain English, the SOW must outline the scope of the effort and cite specific tasks to be performed, references to specific subcontractors if applicable, and specific contractor requirements.

H. {3 Pages} Teaming and Detailed Individual Effort Descriptions

Provide an argument that the team size and composition are both necessary and sufficient to meet the program objectives. Provide detailed task descriptions, costs, and interdependencies for each individual effort and/or subcontractor. To the extent that graduate students and postdocs are involved in individual efforts, describe their role and contribution.

I. {2 Pages} Deliverables Description

List and provide detailed description for each proposed deliverable, including receiving organization and expected delivery date for each deliverable. Include in this section all proprietary claims to results, prototypes, or systems supporting and/or necessary for the use of the research, results, and/or prototype. If there are no proprietary claims, this should be stated. Any proprietary claims on the research results will negatively affect the "DARPA Relevance" evaluation criterion (see the Proposal Evaluation Criteria section below). The offeror must submit a separate list of all technical data or computer software that will be furnished to the Government with other than unlimited rights (see section P below).

J. {3 Pages} Management Plan

Describe formal teaming agreements that are required to execute this program, a brief synopsis of all key personnel, and a clearly defined organization chart for the program team (prime contractor and subcontractors, if any). Information in this section must cover the following information:

- Programmatic relationship of team members;
- Unique capabilities of team members;
- Task responsibilities of team members;
- Teaming strategy among the team members;
- Key personnel along with the amount of effort to be expended by each person during each year; and
- Government role in project, if any

K. {1 Page} Schedule Graphic

Provide a graphic representation of quarterly project schedule including detail down to the individual effort level. This should include but not be limited to, a multi-phase development plan, which demonstrates a clear understanding of the proposed research; and a plan for periodic and increasingly robust experiments over the project life that will show applicability to the overall program concept. Show all project milestones. Research dependencies and costs should be visible in the chart. Use absolute designations for all dates. The first year's efforts should be substantially detailed.

L. {No page limit} Personnel, Qualifications, and Commitments

List key personnel showing a concise summary of their qualifications, discussion of offeror's previous accomplishments and work in this or closely related research areas. Indicate the level of effort in terms of hours to be expended by each person during each contract year and other (current and proposed) major sources of support for them and/or commitments of their efforts. DARPA expects all key personnel associated with a proposal to make substantial time commitment to the proposed activity and the proposal will be evaluated accordingly.

Include a table of key individual time commitments as follows:

Key Individual	**Project**	**Pending/Current**	**2007**	**2008**	**2009**	**2010**
Jane Doe	ICEWS	Proposed	YYY hours	ZZZ hours	UUU hours	WWW hours
	Project 1	Current	2 hours	n/a	n/a	n/a
	Project 2	Pending	100 hours	100 hours	n/a	n/a
John Deer	ICEWS	Proposed				

M. {1 Page} Facilities

Description of the facilities that would be used for the proposed effort. If any portion of the research is predicated upon the use of Government Owned Resources of any type, the offeror shall specifically identify the property or other resource required, the date the property or resource is required, the duration of the requirement, the source from which the resource is required, if known, and the impact on the research if the resource cannot be provided. If no Government Furnished Property is required for conduct of the proposed research, the proposal shall so state.

N. {No page limit} Organizational Conflict of Interest Affirmations and Disclosure

Awards made under this announcement may be subject to the provisions of the Federal Acquisition Regulation (FAR) Subpart 9.5, Organizational Conflict of Interest. All offerors and proposed subcontractors must affirmatively state whether they (including their parent entities, subsidiaries, and affiliates as that term is defined in FAR 2.101) are supporting any DARPA technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the offeror supports, and identify the prime contract number. Affirmations should be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest, as that term

is defined in FAR 2.101, must be disclosed, organized by task and year. This disclosure shall include a description of the action the offeror has taken, or proposes to take, to avoid, neutralize, or mitigate such conflict. **Important note: if the offeror does not comply with this disclosure requirement, the proposal will be rejected.**

O. {No page limit} Intellectual Property

a. FARS/DFARS Noncommercial Items IP Restrictions: (Technical Data and Computer Software).

Offerors responding to this solicitation requesting a contract to be issued under the FAR/DFARS, shall identify all noncommercial technical data, and noncommercial computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. Offerors shall follow the format under DFARS 252.227-7017 for this stated purpose. In the event that offerors do not submit the list, the Government will assume that it automatically has "unlimited rights" to all noncommercial technical data, and noncommercial computer software generated, developed, and/or delivered under any award instrument, unless it is substantiated that development of the noncommercial technical data, and noncommercial computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data, and noncommercial computer software generated, developed, and/or delivered under any award instrument, then offerors should identify the data, documentation, and software in question, as subject to Government Purpose Rights (GPR). In accordance with DFARS 252.227-7013 Rights in Technical Data - Noncommercial Items, and DFARS 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, the Government will automatically assume that any such GPR restriction is limited to a period of five (5) years in accordance with the applicable DFARS clauses, at which time the Government will acquire "unlimited rights" unless the parties agree otherwise. OFFERORS ARE ADVISED THAT OFFERS CONTAINING RESTRICTIONS ON INTELLECTUAL PROPERTY ARE BY NATURE LESS FAVORABLE AND VALUABLE TO THE GOVERNMENT. RESTRICTIONS WILL BE CONSIDERED IN THE EVALUATION PROCESS. If no restrictions are intended, then the offeror should state "NONE."

A sample list for complying with this request is as follows:

NONCOMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions

(LIST)	(LIST)	(LIST)	(LIST)

b. FARS/DFARS Commercial Items IP Restrictions: (Technical Data and Computer Software)

Offerors responding to this solicitation requesting a contract to be issued under the FAR/DFARS, shall identify all commercial technical data, and commercial computer software that may be embedded in any noncommercial deliverables contemplated under the research effort, along with any applicable restrictions on the Government's use of such commercial technical data and/or commercial computer software. In the event that offerors do not submit the list, the Government will assume that there are no restrictions on the Government's use of such commercial items. OFFERORS ARE ADVISED THAT OFFERS CONTAINING RESTRICTIONS ON INTELLECTUAL PROPERTY ARE BY NATURE LESS FAVORABLE AND VALUABLE TO THE GOVERNMENT. RESTRICTIONS WILL BE CONSIDERED IN THE EVALUATION PROCESS. If no restrictions are intended, then the offeror should state "NONE."

A sample list for complying with this request is as follows:

COMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

c. Non-FARS/DFARS IP restrictions: (Technical Data and Computer Software)

Offerors responding to this solicitation requesting a Cooperative Agreement, Technology Investment Agreement, or Other Transaction for Prototype shall follow the applicable rules and regulations governing these various award instruments, but in all cases should appropriately identify any potential restrictions on the Governments use of any Intellectual Property contemplated under those award instruments in question. This includes both Noncommercial Items and Commercial Items. Although not required, offerors may use a format similar to that described in Paragraphs 3.4.1 and 3.4.2 herein. OFFERORS ARE ADVISED THAT OFFERS CONTAINING RESTRICTIONS ON INTELLECTUAL PROPERTY ARE BY NATURE LESS FAVORABLE AND VALUABLE TO THE GOVERNMENT. RESTRICTIONS WILL BE CONSIDERED IN THE EVALUATION PROCESS. If no restrictions are intended, then the offeror should state "NONE."

d. Patent dependencies

Please include documentation proving your ownership of or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) that will be utilized under your proposal for the DARPA program. If a patent application has been filed for an invention that your proposal utilizes, but the application has not yet been made publicly available and contains proprietary information, you may provide only the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and a summary of the patent title, together with either: 1) a representation that you own the invention, or 2) proof of possession of appropriate licensing rights in the invention.

e. IP representations – All offerors

Please also provide a good faith representation that you either own or possess appropriate licensing rights to all other intellectual property that will be utilized under your proposal for the DARPA program. If you are unable to make such a representation concerning non-patent related intellectual property, please provide a listing of the intellectual property to which you do not have needed rights, and provide a detailed explanation concerning how and when you plan to obtain these rights.

P. {1 page} Participation Strategy for Potential Classified Phases

All offerors and proposed subcontractors (including their parent entities, subsidiaries, and affiliates as that term is defined in FAR 2.101) must provide a brief description of their strategy either to participate in potential classified phases of ICEWS or to transition their technology to other entities that can participate.

Section III. {no page limit} Additional Technical Information

A bibliography of relevant technical papers and research notes (published and unpublished) that document the technical ideas, upon which the proposal is based, may be included in the proposal submission. Provide one set for the original full proposal and one set for each of the full proposal hard copies.

Please note: The materials provided in this section and submitted with the proposal, will be considered for the reviewer's convenience only and not considered as part of the proposal for evaluation purposes. For the reviewer's convenience, this section may also include up to 3 relevant papers, published or unpublished.

Section IV. Cost proposal

The cost volume should be a separate document from the technical and management volume comprising sections I through III.

A. Cover sheet

- Name and address of offeror (include zip code);
- Name, title, and telephone number of offeror's point of contact;
- Award instrument requested: cost-plus-fixed-fee (CPFF), cost-contract--no fee, cost sharing contract--no fee, or other type of procurement contract (specify), agreement, or other award instrument;
- Place(s) and period(s) of performance;
- Funds requested from DARPA for the Base Effort, each option and the total proposed cost; and the amount of cost share (if any);
- Name, mailing address, telephone number and Point of Contact of the offerors cognizant government administration office (i.e., Office of Naval Research/Defense Contract Management Agency (DCMA)) (if known);
- Name, mailing address, telephone number, and Point of Contact of the Offeror's cognizant Defense Contract Audit Agency (DCAA) audit office (if known);
- Any Forward Pricing Rate Agreement, other such Approved Rate Information, or such other documentation that may assist in expediting negotiations (if available);
- Contractor and Government Entity (CAGE) Code,
- Dun and Bradstreet (DUN) Number;
- North American Industrial Classification System (NAICS) Number [NOTE: This was formerly the Standard Industrial Classification (SIC) Number]; and,
- Taxpayer Identification Number (TIN).
- All subcontractor proposal backup documentation to include items a. through l. above, as is applicable and available).

B. Detailed cost breakdown

Total program cost broken down by fiscal year. Cost breakdown categories:

- Direct Labor – Individual labor category or person, with associated labor hours and unburdened direct labor rates;
- Indirect Costs – Fringe Benefits, Overhead, General and Administrative Expense, Cost of Money, etc. (Must show base amount and rate);
- Travel – Number of trips, number of days per trip, departure and arrival destinations, number of people, etc.
- Subcontract – A cost proposal as detailed as the offeror's cost proposal will be required to be submitted by the subcontractor. The subcontractor's

cost proposal can be provided in a sealed envelope with the offeror's cost proposal or will be requested from the subcontractor at a later date;
- Consultant – Provide consultant agreement or other document which verifies the proposed loaded daily/hourly rate;
- Materials – Should be specifically itemized with costs or estimated costs. An explanation of any estimating factors, including their derivation and application, shall be provided. Please include a brief description of the offeror's procurement method to be used;
- Other Direct Costs – Should be itemized with costs or estimated costs. Backup documentation should be submitted to support proposed costs.
- Costs of major program tasks and major cost items by year and month;
- Supporting cost and pricing information.

Supplementary information should be provided in sufficient detail to substantiate the summary cost estimates above. Include a description of the method used to estimate costs and supporting documentation. Provide the basis of estimate for all proposed labor rates, indirect costs, overhead costs, other direct costs and materials, as applicable.

C. Government Furnished Property

Contractors requiring the purchase of information technology (IT) resources as Government Furnished Property (GFP) MUST attach to the submitted proposals the following information:

- A letter on corporate letterhead signed by a senior corporate official and addressed to Dr. Sean P. O' Brien, Program Manager, DARPA/IPTO, stating that you either can not or will not provide the information technology (IT) resources necessary to conduct the said research.
- An explanation of the method of competitive acquisition or a sole source justification, as appropriate, for each IT resource item.
- If the resource is leased, a lease/purchase analysis clearly showing the reason for the lease decision.
- The cost for each IT resource item.

PROPOSAL EVALUATION CRITERIA

It is the policy of DARPA to ensure impartial, equitable, comprehensive proposal evaluations and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals. Pursuant to FAR 35.016, the primary basis for selecting proposals for acceptance shall be technical, importance to agency programs, and fund availability. In order to

provide the desired evaluation, qualified Government personnel will conduct reviews and (if necessary) convene panels of experts in the appropriate areas.

Proposals will not be evaluated against each other, since they are not submitted in accordance with a common work statement. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons. For evaluation purposes, a proposal is the document described in PROPOSAL PREPARATION AND FORMAT Section I, Section II, and Section IV (see above.) Other supporting or background materials (Section III) submitted with the proposal will be considered for the reviewer's convenience only and not considered as part of the proposal.

Evaluation of proposals will be accomplished through a scientific review of each proposal using the following criteria. While these criteria are listed in descending order of relative importance, it should be noted that the combination of all non-cost evaluation factors is significantly more important than cost:

1. Convincing approach:
- Technical and theoretical approach is coherent, convincing and well-developed.
- Demonstrates awareness of previous work (***extensive*** literature review is not encouraged or required).

2. Completeness:
- Develops a complete end-to-end solution (offerors with incomplete solutions should register on the teaming website).
- Modeling approaches have potential to forecast multiple classes of events of interest to DARPA.

3. Data:
- Required data sources are clearly identified.
- Evidence that required data will be available for most countries and most provinces in some countries.
- Required data inputs have the potential to be automated or semi-automated; models can ultimately be maintained with current data at reasonable cost and effort.
- Describes a cost-effective approach for maintaining requisite data feeds to the models in near-real time.

4. Offeror's Capabilities and Related Experience:

- The offeror has credible capability and experience to complete the proposed work. The qualifications, capabilities, and demonstrated

achievements of the proposed principals and other key personnel for the primary and subcontractor organizations must be clearly shown.

- The key individuals must plan to commit sufficient time to the project to ensure its success. The proposers should have a track record of innovation and leadership in the relevant disciplines, and should be professionally well-positioned to influence the research agendas of entire disciplines.
- Proposers should have sufficient professional and research expertise to be able to react appropriately, plan, and re-plan when serendipitous technical advances and negative results arise.

5. Potential Contribution and relevance to DARPA mission:

- The objective of this criterion is to establish a strong link between this work and the DARPA mission.
- Evaluation of this criterion will consider factors such as the likelihood of transitioning the applied research into operational practice.
- Also considered will be impediments to future transition, including intellectual property restrictions.

6. Cost and Schedule Reasonableness and Realism:

- The objective of this criterion is to evaluate whether the costs and schedule are aligned with the proposed work plan, whether strategies for cost reduction are being employed effectively, and whether the overall cost/benefit ratio is deemed appropriate. The overall estimated cost and schedule to accomplish the effort should be clearly shown as well as the substantiation of the costs for the technical complexity described.
- Evaluation will consider the value of the research to Government and the extent to which the proposed management plan will effectively allocate resources to achieve the capabilities proposed. Creative approaches to reduce costs by leveraging other ongoing research will be viewed favorably, particularly in support of experimentation.
- Overall cost and schedule is considered a substantial evaluation criterion but is secondary to technical excellence. Unrealistically low cost estimates are as undesirable as unreasonably high costs. In general, the proposal cost should be commensurate with the work effort proposed, adequate detail must be provided to allow proper evaluation of the cost rationale, and cost effective measures must be employed wherever possible.